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CONTRAST SENSITIVITY OF CIRCUIT TELEVISION SYSTEMS, (U)
JUN 80 L A SHIFRIN
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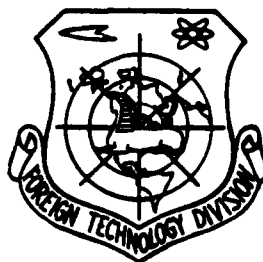
FOREIGN TECHNOLOGY DIVISION



CONTRAST SENSITIVITY OF CIRCUIT TELEVISION SYSTEMS

by

L. A. Shifrin



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U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<i>А а</i>	A, a	Р р	<i>Р р</i>	R, r
Б б	<i>Б б</i>	B, b	С с	<i>С с</i>	S, s
В в	<i>В в</i>	V, v	Т т	<i>Т т</i>	T, t
Г г	<i>Г г</i>	G, g	У у	<i>У у</i>	U, u
Д д	<i>Д д</i>	D, d	Ф ф	<i>Ф ф</i>	F, f
Е е	<i>Е е</i>	Ye, ye; E, e*	Х х	<i>Х х</i>	Kh, kh
Ж ж	<i>Ж ж</i>	Zh, zh	Ц ц	<i>Ц ц</i>	Ts, ts
З з	<i>З з</i>	Z, z	Ч ч	<i>Ч ч</i>	Ch, ch
И и	<i>И и</i>	I, i	Ш ш	<i>Ш ш</i>	Sh, sh
Й й	<i>Й й</i>	Y, y	Щ щ	<i>Щ щ</i>	Shch, sch
К к	<i>К к</i>	K, k	Ъ ъ	<i>Ъ ъ</i>	"
Л л	<i>Л л</i>	L, l	Ы ы	<i>Ы ы</i>	Y, y
М м	<i>М м</i>	M, m	Ь ь	<i>Ь ь</i>	'
Н н	<i>Н н</i>	N, n	Э э	<i>Э э</i>	E, e
О о	<i>О о</i>	O, o	Ю ю	<i>Ю ю</i>	Yu, yu
П п	<i>П п</i>	P, p	Я я	<i>Я я</i>	Ya, ya

*ye initially, after vowels, and after ъ, ы; e elsewhere.
When written as ё in Russian, transliterate as yě or ě.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	sinh ⁻¹
cos	cos	ch	cosh	arc ch	cosh ⁻¹
tg	tan	th	tanh	arc th	tanh ⁻¹
ctg	cot	cth	coth	arc cth	coth ⁻¹
sec	sec	sch	sech	arc sch	sech ⁻¹
cosec	csc	csch	csch	arc csch	csch ⁻¹

Russian English

rot curl
lg log

CONTRAST SENSITIVITY OF CIRCUIT TELEVISION SYSTEMS

L. A. Shifrin

In the television systems using tracing scanning, the control signals are shaped in the feedback loop closed through a photoelectron converter or, in other words, through an image.

It is possible to show that for stable tracing, it is necessary that the scanning radius R exceeded τ - a values which is inverse to the sharpness of the brightness transient. It is obvious that in this case, which is important from a practical standpoint, the value of this difference changes linearly into the amplitude of the video signal, making it possible to identify the contrast K with a transmission coefficient of a certain linear inertialess link.

The presence of a link with such characteristics in the composition of a circuit system with a linear control leads to the fact that the equivalent time constant of the clamping channel of this system τ proves to be proportional to the difference contrast in the degree n , where n is determined by a specific method of shaping of the control signal. According to [1], under similar conditions, the rate of the disturbing effect of the clamping channel Ω is proportional to the square of the contrast. In accordance with this, the dynamic error of reproduction ϵ will prove to be connected with the contrast by the expression

$$\epsilon = \tau \Omega \propto K^{2-n}. \quad (1)$$

As a particular case, from (1) follows the conclusion [1] concerning the invariance of dynamic errors of the established conditions of tracing of the circuit system with $\eta=2$. However, the speed of tracing, in this system, changes in proportion to the values of the brightness transient. At the same time, one should take into account the difficulties connected with the creation of stable control circuits with a gain factor, which changes significantly. Thus, to obtain stable characteristics of scanning over a wide range of variation in the brightness transients, the construction of a parametrically invariant control circuit will be a significantly more comprehensive solution.

The method proposed in [2] for constructing the parametrically invariant circuit systems is based on the introduction of a two-dimensional relay self-excited circuit into the composition of the original system, as is shown in Fig. 1.

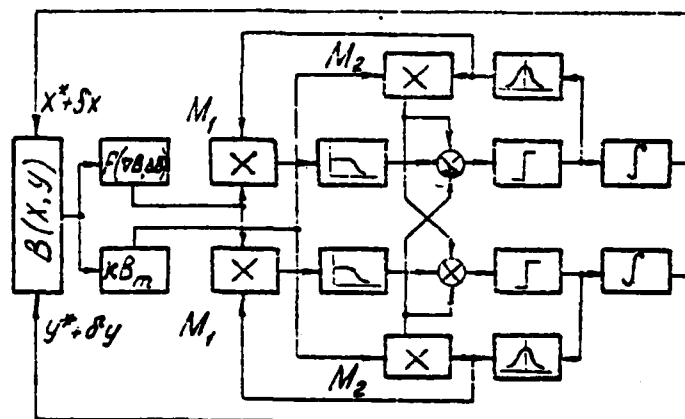


Fig. 1.

The circuit system constructed in this manner with a relay control is characterized by the following new features:

1. This television system is parametrically invariant due to the effect of vibrational linearization as a result of the natural vibrations [3].
2. Natural vibrations, which arise in the circuit system with a relay control, are used for the purposes of scanning.
3. Errors arising during tracing are processed at a maximum

possible speed in the system - scanning speed.

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